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AUTHOR Manset-Williamson, Genevieve; St. John, Edward; Worthington, Kimberly

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ABSTRACT

In recent years there has been an increased interest in developing the basic reading and writing skills of primary students at risk for academic failure. Problems associated with typical evaluations of programmatic impact on students' literacy skills include the amount of testing time, sensitivity to smaller levels of growth, or, as in the case of the ISTEP+, the Indiana state-wide accountability program, the short time interval between the program intervention and the subsequent ISTEP+ testing. This report describes the use of the Basic Academic Skills Sample (BASS) in the evaluation of two literacy intervention programs. A total of 618 students in 2 Indiana elementary schools participated in this first year of a pilot study. Results suggest that the BASS provides useful information about progress associated with early literacy interventions both for students as a whole and in comparing trends for students of differing ability levels. (Contains 7 tables and 21 figures of data.) (Author/RS)

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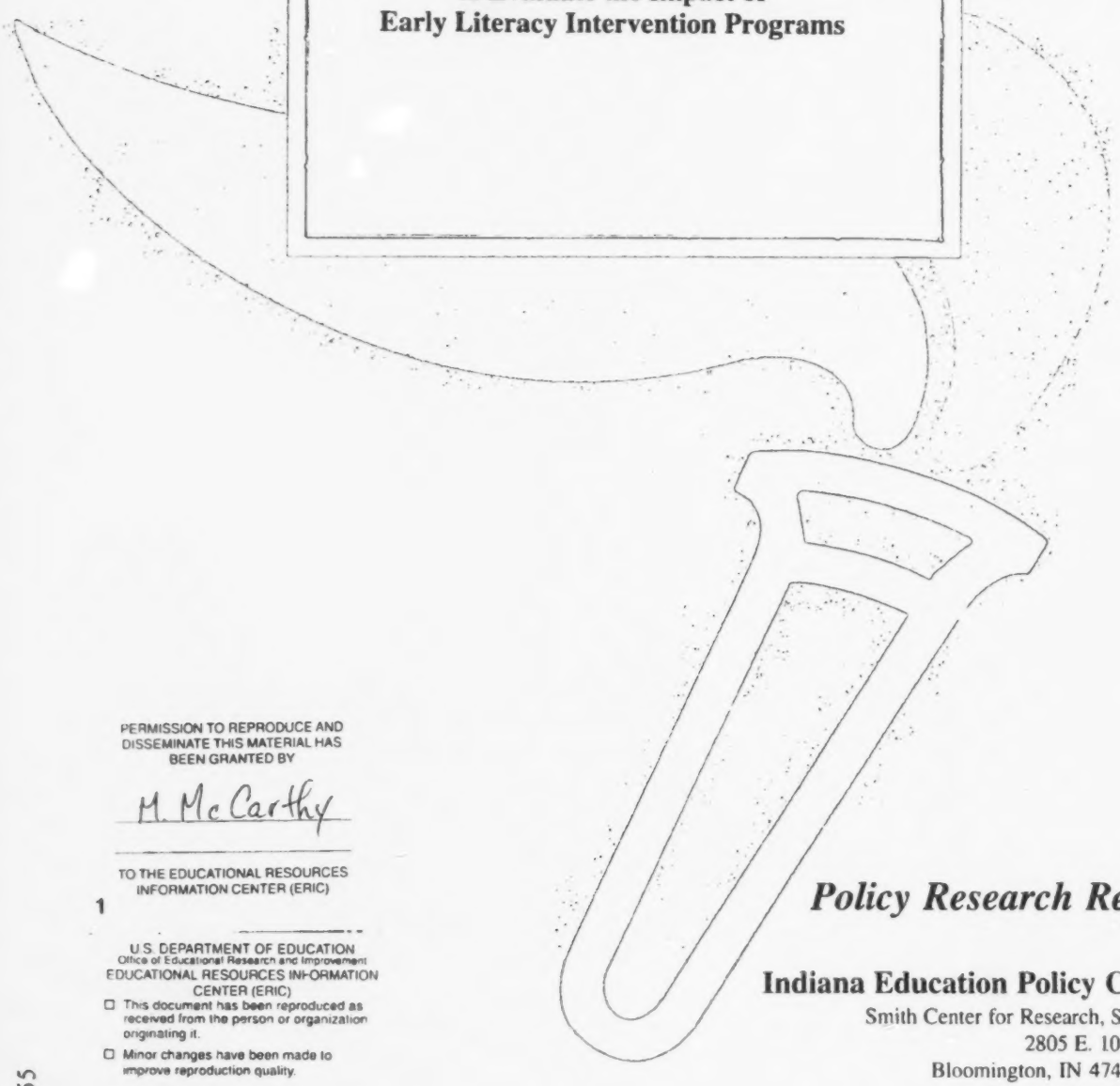
Using the Basic Academic Skills Samples (BASS) to Evaluate the Impact of Early Literacy Intervention Programs



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Smith Center for Research, Suite 170
2805 E. 10th Street
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Phone: (812) 855-1240
Fax: (812) 855-0240
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Using the Basic Academic Skills Samples (BASS) to Evaluate the Impact of Early Literacy Intervention Programs

Genevieve Manset-Williamson
Edward St. John
Kimberly Worthington

Indiana Education Policy Center
Indiana University

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Policy Research Report #01-05

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Abstract

In recent years there has been an increased interest in developing the basic reading and writing skills of primary students at-risk for academic failure. Problems associated with typical evaluations of programmatic impact on students' literacy skills include the amount of testing time, sensitivity to smaller levels of growth, or, as in the case of the ISTEP+, the state-wide accountability program, the short time interval between the program intervention and the subsequent ISTEP+ testing. In this report we describe the use of the Basic Academic Skills Sample (BASS) in the evaluation of two literacy intervention programs. Results suggest that the BASS provides useful information about progress associated with early literacy interventions both for students as a whole and in comparing trends for students of differing ability levels.

Using the Basic Academic Skills Samples (BASS) to Evaluate the Impact of Early Literacy Intervention Programs

In recent years there has been an increased interest in developing the basic reading and writing skills of primary students at-risk for academic failure. It is generally assumed that providing a strong foundation in literacy early will better ensure more students will be successful in school and graduate from high school. With this in mind, in 1997-98 the Indiana Department of Education implemented the Early Literacy Intervention Grant Program (ELIGP) to better meet the needs of the state's early literacy challenge. Since 1997, funding has been provided by the state to develop early literacy programs. A substantial proportion of the funding went to the training of Reading Recovery (Clay, 1993) teachers. Schools had the option of choosing other locally or nationally developed early literacy interventions. Since then, implementation studies at the Indiana Education Policy Center (IEPC) have documented shifts in the nature of literacy instruction in the state (Manset, St. John, Simmons, Michael, Bardzell, Hodges, Jacob, & Gordon, 1999; St. John, Manset, Hu, Simmons, & Musoba, 2000). In addition, both the IDOE and schools have expressed interest in evaluating the impact of these curricular and organizational changes on student skill development. In response, we piloted the use of the Basic Academic Skills Samples (BASS) to evaluate their early literacy program. We were interested in finding an evaluation approach that would be both pragmatic and responsive to changes in programming. In this report, we summarize the first year of this pilot study.

Evaluating Early Literacy Programs

The proliferation of school reform models, debate over the most efficacious approach to reading instruction, and an increased emphasis on accountability all have led to an interest in evaluating early literacy programs. In Indiana, as in other states, students are now tested for the state assessment program at the beginning of Grade Three. The state assessment is too late to support a responsive change in programming, and in schools with a high attrition rate, the large percentage of the students in Grade Three that participate in the state assessment are not the same ones that received the literacy intervention. Some of the literacy interventions do include a form of formative

evaluation, but while it is useful for tracking individual performance it is not always readily combined quantitatively to get a sense of the overall impact of programming changes. In addition, adding more standardized tests can be expensive and time-consuming for both teachers and students. In contrast to more formal, standardized assessment, curriculum-based assessment allows teachers to measure student progress in a way that is cost-effective, sensitive to performance changes, and can be modified to meet local needs (Howell, Fox, & Morehead, 1993). It also avoids the problems that arise with the use of high-stakes, standardized tests, particularly with ethnic minority students and students with disabilities (Manset & Washburn, 2000; Salvia & Ysseldyke, 1998).

Researchers in special education recognized in the 1980s the need to develop a simplified way in which to evaluate program innovations for large numbers of students whose changes in performance are not easily registered by standardized tests. Deno (1985) and his colleagues developed the Basic Academic Skills Samples (BASS), a curriculum-based assessment tool that serves as an index for basic reading, writing, and math skills (Deno, Espin, & Maruyama, 1985). It is an index in that it selects a few examples of the skill that is then tested in a whole-class setting literally in minutes. Scoring is again relatively simple, yet the scores are predictive of those tests requiring more complex performance. While not appropriate for diagnostic decisions, the BASS has been used to evaluate progress for students with disabilities in full inclusion programs. For this study we were examining the use of the BASS as a means to evaluate the early literacy intervention programs of two schools.

Method

Participants

A total of 618 students in two Indiana elementary schools participated in this study. Demographics and state achievement test scores can be found in Tables 1 and 2. Both are high poverty, urban schools that had received state grants to support the implementation of specific early literacy programs. Because of recent grant-supported changes in their early literacy instruction, both schools volunteered to participate in this pilot study examining the using of curriculum-based assessment (CBA) to evaluate their early literacy programs. In their grant application, Elm Creek Elementary School

described their reading instruction as a balanced combination of phonics, guided reading, independent reading, and process writing. They supplemented general reading instruction with Reading Recovery (Clay, 1993) and its extension, Literacy Groups, for the lowest readers. Reading Recovery is a highly-structured, intensive tutorial program designed to target Grade One students at-risk for reading failure. The program involves daily tutoring which includes the rereading of familiar books, the identification of letters and word making, the writing of a story, and performance assessment. Emphasis is placed on the development of student reading strategies. Literacy Groups were developed out of a need to extend the procedures of Reading Recovery to students in general and beyond Grade One. Elm Creek Elementary School proposed to use the grant money to increase the expertise of the paraprofessionals that were leading the Literacy Groups. All students in Grades One and Two at Elm Creek participated in the program.

In their grant proposal, Sycamore Heights described their early literacy program as a combination of instruction from basal readers, trade books, and skill worksheets. They also stated there was no common philosophical or instructional approach shared by each teacher, which led them to choose a literacy program that would provide consistency across classrooms. Like Elm Creek, Sycamore Heights had Reading Recovery and Literacy Groups for Grade One students. They received grant monies to support the implementation of First Steps, a classroom-based language development model that targets reading, writing, spelling, and oral communication. First Steps is a complex program that includes intensive decoding instruction, Read Alouds, process writing, vocabulary development, and formative evaluation in whole class, small-group, and tutorial settings. The grant monies paid for professional development and materials to implement this program. In this first year of implementing First Steps, they chose to emphasize the writing portion of the program. Students in Grades One to Three were tested.

Table 1
Demographics for Participating Schools

School	Grades Participating	Enroll	% Free Lunch	% White	% Black	% Other Ethnic
Elm Creek	1-2	674	48.3	87.5	8.6	3.8
Sycamore Heights	1-3	569	49.7	82.8	15.6	1.6

Table 2
ISTEP+ Achievement Test Scores for Grade Three Students in Participating Schools

School	% Passing Language Arts	% Passing Math	Total NCE
Elm Creek	63	70	58.8
Sycamore Heights	66	86	64.5

Instruments

Students were tested in reading and writing using the BASS. The BASS is a curriculum-based assessment device designed to serve as an index of basic skill development. The reading portion consists of three maze passages with an approximate readability of Grade One. Students are allowed one minute to read and circle the correct multiple choice (CMC) provided for the blanks in each sentence. In the writing portion, students are given a story starter and have two minutes to write as much as they can of the story. Writing samples are given two scores, one for total words written (TWW) and total correct word sequence (CWS), a measure of the number of consecutive correctly spelled and grammatically correct word pairs.

Procedures

Students were tested in the beginning of November and May of the same school year. The first testing was administered by Policy Center staff while teachers observed. In the spring, classroom teachers administered the test. Policy Center staff scored the samples. Teachers also scored the spring sample, and their scores were compared with

those of the Center staff. Scoring by both teachers and Policy Center staff was comparable on the TWW and CMC, but there were unacceptable differences in the teacher and staff scoring of CWS. Because of the inconsistencies in the scoring of CWS by teachers, scoring by the Policy Center staff was used as final scores in all cases.

Study Design and Data Analysis

Descriptive statistics were calculated for reading (CMC) and writing scores (TWW, CWS). Differences in fall and spring scores were statistically analyzed using dependent samples t-tests. Changes in scores were graphed by grade and by quartile within grade. Using a "lag" design, the statistical differences between Spring Grade One scores and Fall Grade Two scores, and Spring Grade Two and Fall Grade Three scores were calculated using independent samples t-tests as well. Although we acknowledge that this analysis is premature given the third data point that will be collected next fall, the findings were promising and therefore worth an examination. Because the interventions were designed to target the poorest readers, particular importance was paid to whether significant gains were made by students as a whole, whether the lowest-achieving students (Quartile 1) made greater gains than their higher-achieving classmates, and whether Quartile 1 students in Grade One exceeded the fall scores of Quartile 1 students in Grade Two.

Results

Elm Creek Elementary

Descriptive statistics for Elm Creek's reading and writing BASS scores can be found in Tables 3 and 4. In reading (CMC), mean gains for both Grade One (M=2.91, SD=3.83 to M=11.27, SD=10.93) and Grade Two (M=9.37, SD=6.30 to M=23.99, SD= 10.50) students were statistically significant (see Figure 1). Grade One students have already exceeded the November scores of Grade Two students. Significant gains were also made in Grades One and Two for writing: both Total Words Written and Correct Word Sequence (see Figures 2 & 3).

Table 3
Descriptive Statistics for Elm Creek Reading and Writing Scores: Grade One

	CMC		TWW		CWS	
	Fall	Spring	Fall	Spring	Fall	Spring
All Students						
N	112	83	112	83	112	83
M	2.91	11.27*	12.57	26.82*	3.57	12.26*
SD	3.83	10.93	8.26	15.50	4.00	13.61
QRTL 1						
N	27	27	26	19	26	26
M	0.00	8.47	5.85	19.21	0.00	7.20
SD	0.00	7.47	2.63	10.14	0.00	4.56
QRTL 2						
N	21	21	19	19	18	18
M	1.00	9.71	10.11	25.33	1.06	11.73
SD	0.00	7.05	0.81	9.08	0.24	9.34
QRTL 3						
N	29	29	34	34	35	35
M	2.57	9.70	13.56	28.15	3.17	14.43
SD	0.63	10.11	1.65	12.95	0.98	7.04
QRTL 4						
N	28	28	26	26	26	26
M	8.32	17.05	24.12	37.05	8.65	20.65
SD	3.96	14.92	7.58	20.04	3.70	18.9

*p<.01 (Analysis run for "All Students" only)

Table 4
Descriptive Statistics for Elm Creek Reading and Writing Scores: Grade Two

	CMC		TWW		CWS	
	Fall	Spring	Fall	Spring	Fall	Spring
All Students						
N	127	127	127	127	127	127
M	9.37	23.99*	29.84	52.00*	14.73	33.09*
SD	6.30	10.50	15.56	18.79	10.04	15.09
QRTL 1						
N	24	24	28	28	27	27
M	3.08	14.33	15.14	43.65	4.52	20.00
SD	1.44	8.48	6.49	14.51	2.15	10.09
QRTL 2						
N	29	29	32	32	31	31
M	6.90	25.94	28.31	44.05	10.77	34.04
SD	0.86	11.06	2.86	12.92	2.84	15.76
QRTL 3						
N	35	35	29	29	30	30
M	10.57	23.20	35.34	60.58	18.47	31.78
SD	3.03	5.98	7.04	22.43	2.11	11.26
QRTL 4						
N	30	30	29	29	30	30
M	18.48	29.78	35.34	60.36	28.70	42.90
SD	2.29	11.37	7.40	17.31	4.81	15.17

*p<.01 (Analysis run for "All Students" only)

Figure 1: Elm Creek Mean BASS Reading Scores, Grades One and Two

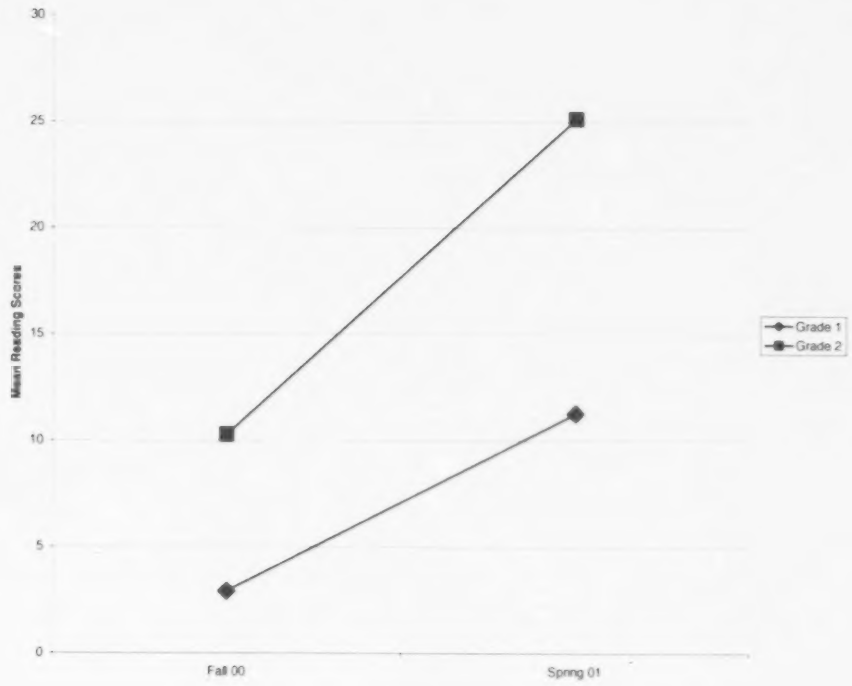


Figure 2: Elm Creek Mean BASS Total Words Written, Grades One and Two

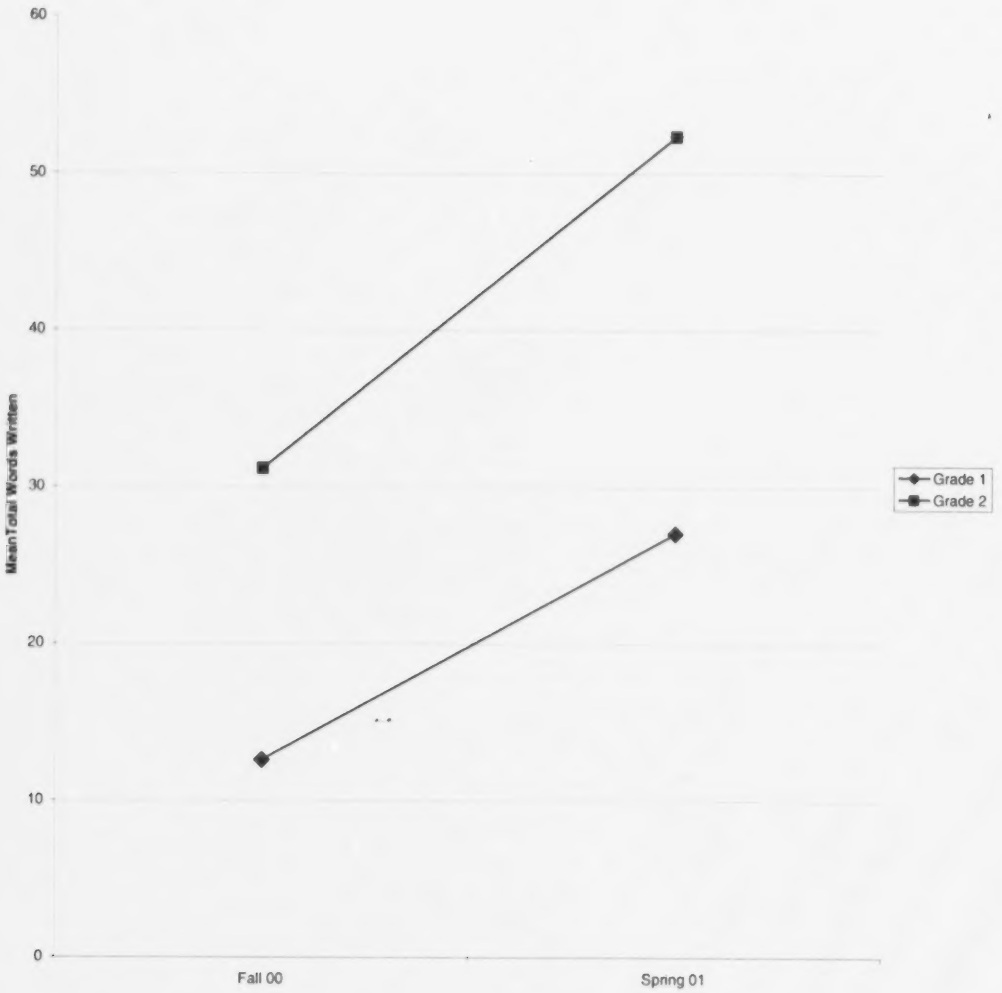
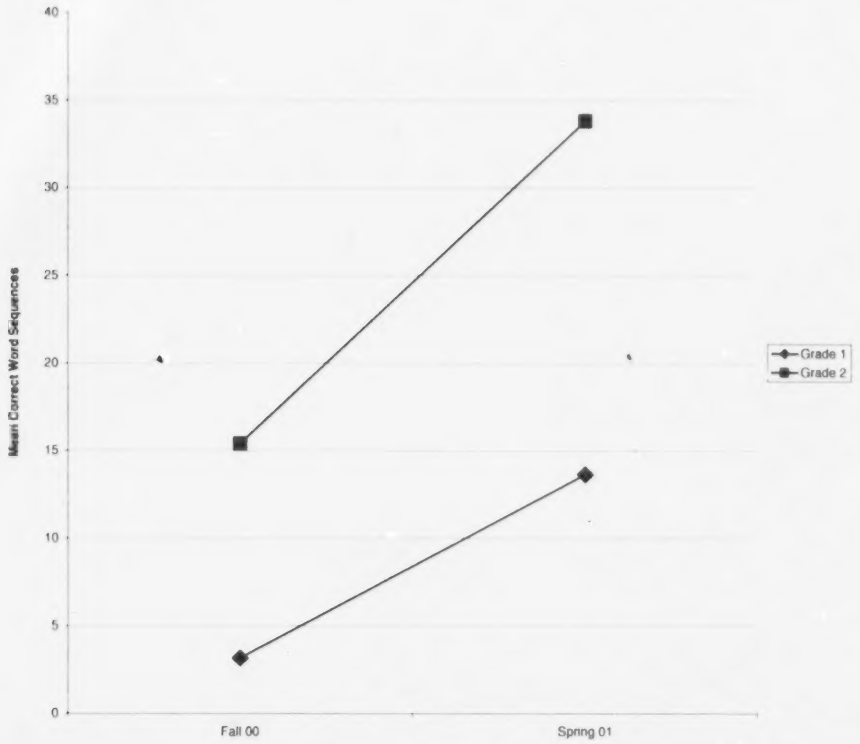


Figure 3: Elm Creek Mean BASS Correct Word Sequences, Grades One & Two



Gains were also examined in reading and writing by quartile of performance on the fall scores. In Grade One, gains were made by students at all levels of performance (see Figures 4-6). The lowest-achieving students made similar gains to the higher-achieving students, and were able to achieve a mean (M =8.47, SD = 7.04) that was close to the average score of Grade Two students in the fall. In writing, for both measures of fluency (TWW) and mechanics (CWS), the lowest-achieving students made gains that were similar to those of their higher-achieving classmates. In both cases the lowest quartile students exceeded the mean scores for all Grade One students in the fall, and those of Quartile 2 students in the fall.

Figure 4: Elm Creek Mean BASS Reading Scores, Grade One by Quartile

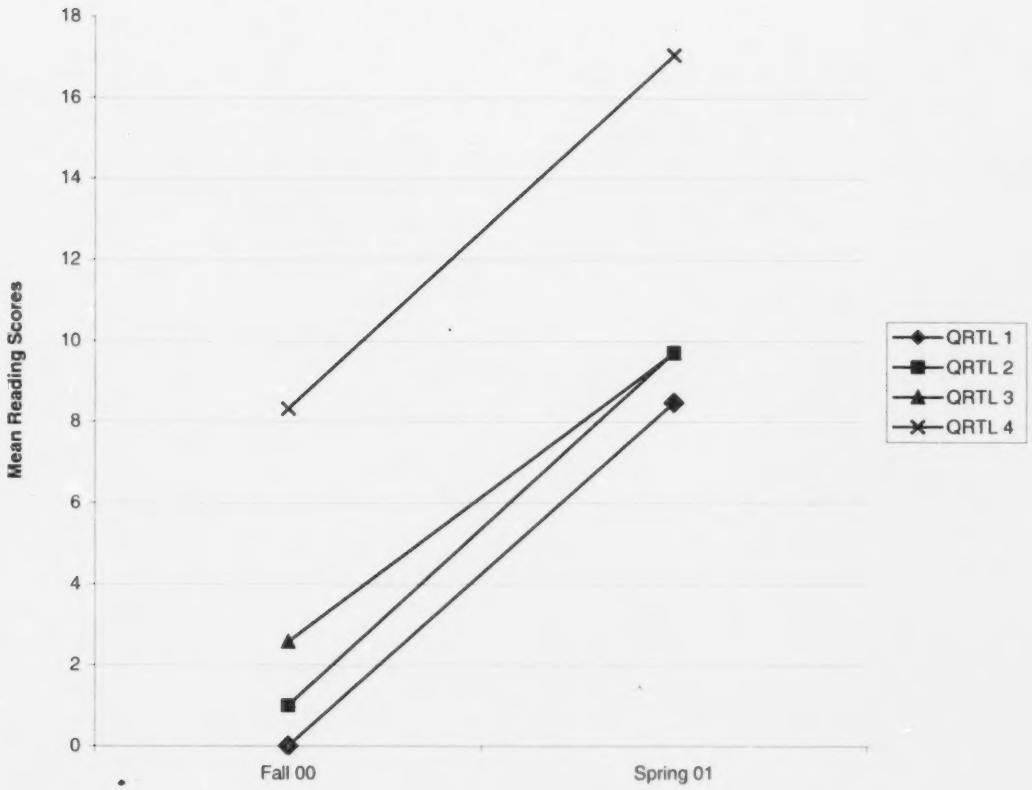


Figure 5: Elm Creek Mean BASS Total Words Written, Grade One by Quartile

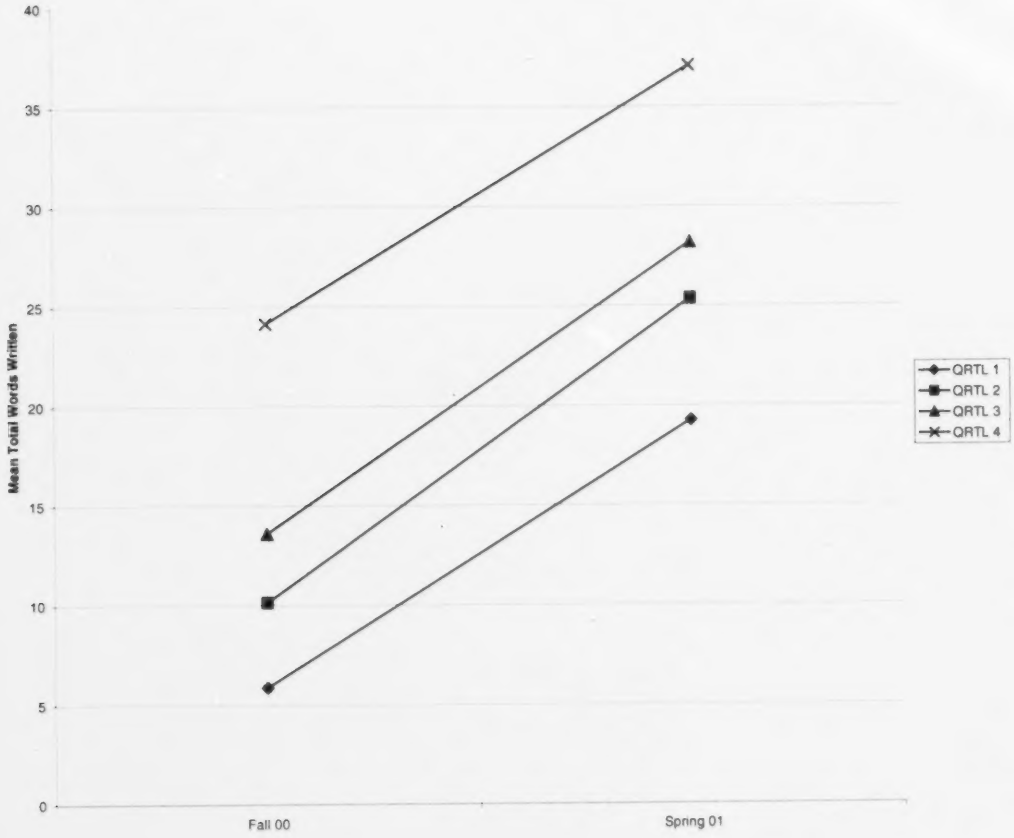
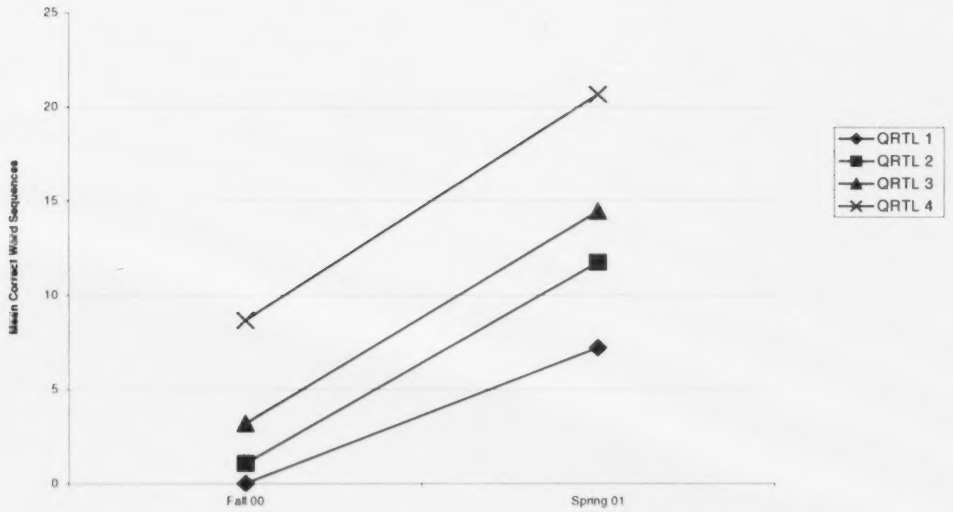


Figure 6: Elm Creek Mean BASS Correct Word Sequences, Grade One by Quartile



For Grade Two at Elm Creek, significant gains were made in Reading (CMC) (M=9.37, SD = 6.30 to M=23.99, SD=10.50), writing fluency (TWW) (M=29.84, SD = 15.56 to M=52.00, SD=18.79), and writing mechanics (CWS) (M=14.73, SD = 10.04 to M=33.09, SD=15.09) (see Figures 1-3). In reading, Quartile 1 students made gains similar to other groups of students, except the low-average, Quartile 2 students, which made exceptional gains that led them to exceed Quartile 3 students in the spring (see Figure 7). In Reading, Grade Two Quartile 1 students exceeded the average Grade Two students in the fall. Both fluency (TWW) and mechanics (CWS) writing gains of Quartile 1 students exceeded not only the means of all students in the fall, but the TWW exceeded the scores of the highest achieving students (see Figures 8-9).

Figure 7: Elm Creek Mean BASS Reading Scores, Grade Two by Quartile

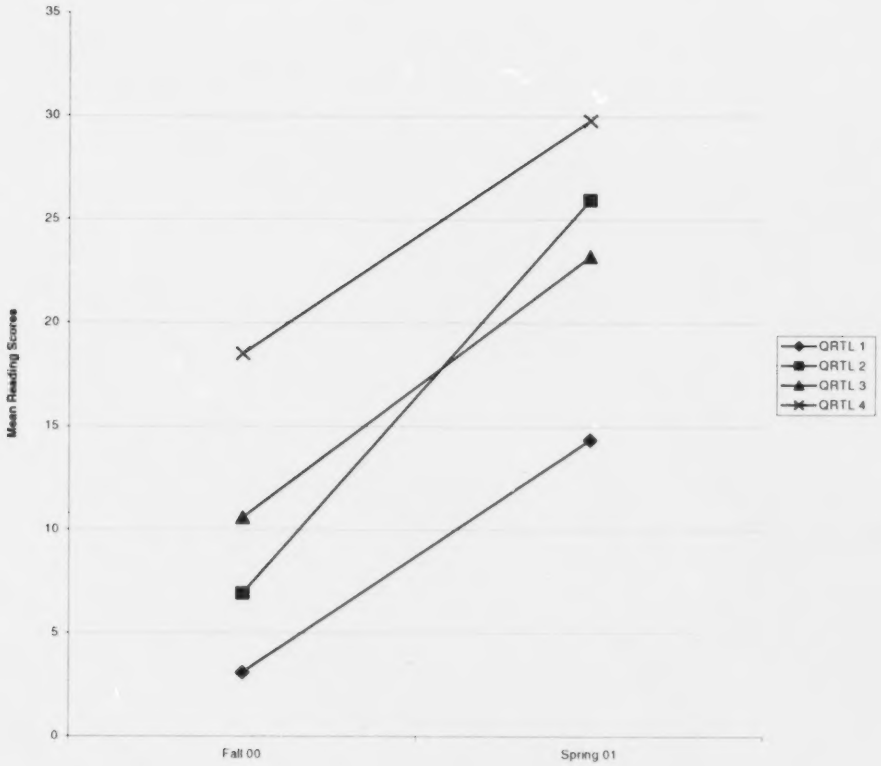


Figure 8: Elm Creek Mean BASS Total Words Written, Grade Two by Quartile

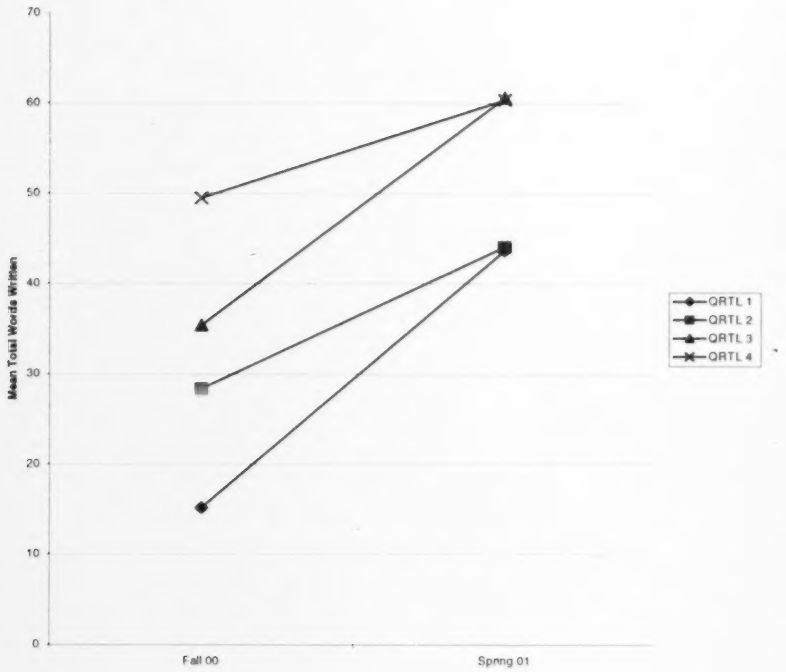
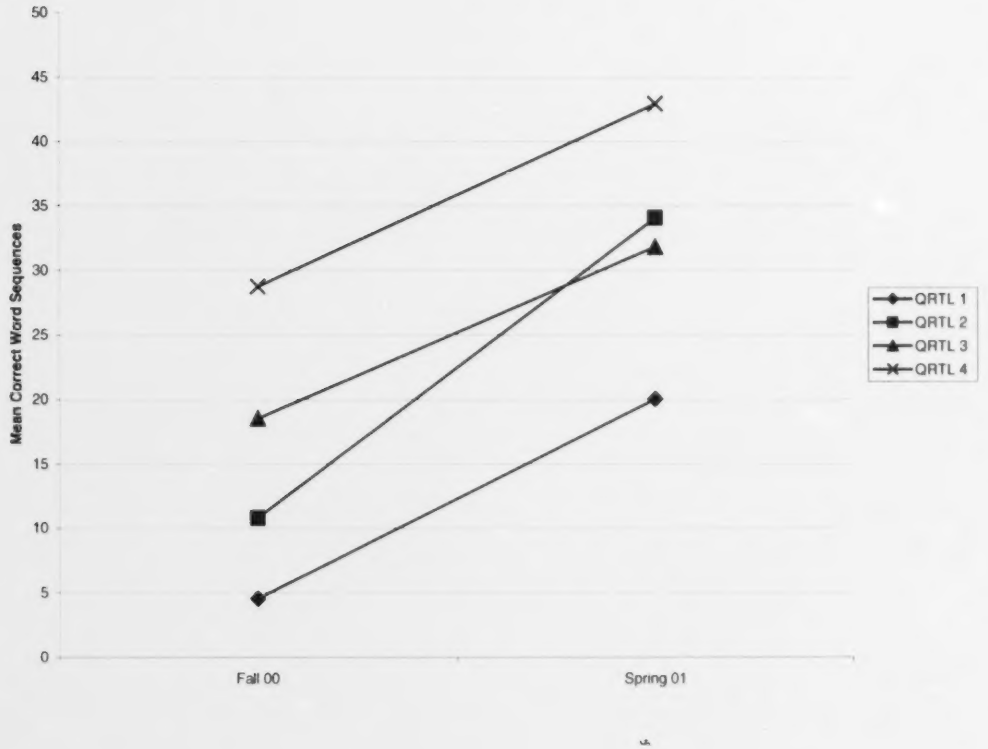


Figure 9: Elm Creek Mean BASS Correct Word Sequences, Grade Two by Quartile



Sycamore Heights

Descriptive statistics for Sycamore Heights reading and writing BASS scores can be found in Tables 5 -7. In reading (CMC), mean gains for both Grade One (M=1.92, SD=2.52 to M=8.74, SD=7.04), Grade Two (M=9.55, SD=7.47 to M=15.53, SD= 8.68) and Grade Three (M=16.96, SD=7.51 to M=26.50, SD= 12.12) students were statistically significant (see Figure 10). Significant gains were also made in all three grades for writing, both Total Words Written and Correct Word Sequence (see Figures 11 & 12). These gains were particularly significant for Grade Three students. In Reading scores, mean Spring scores for Grade One students approached the Fall Grade Two students, and the mean Spring scores of Grade Two students approached the Fall scores of Grade Three students. In writing fluency (TWW), gains for Grade One and Grade Two students far exceeded those of the Fall scores of the students ahead of them. Gains in writing mechanics (CWS), were greater for Grade Three students than in either Grade One or Two.

Grade One students in Quartile 1 made gains that were comparable to those of higher-achieving groups of students both in reading and writing scores (see Figures 13-15). These patterns are similar for Grade Two and Three students, with reading and writing gains for Quartile 1 students similar to higher-performing students. Quartile One students in Grades One and Two had higher mean scores than their Quartile One peers in the fall of the following grade level (see Figures 16-21).

Discussion

This pilot study involved the use of the BASS to evaluate the impact of changes in a school's early literacy program. The findings represent the outcomes of data collected in early November and May. Students will be tested again next November. In this analysis, we are interested in whether the BASS can distinguish between grade levels of students, and ability levels within those grades. Mean scores were also examined for evidence of significant gains overall and for differently performing groups. Findings for reading, writing fluency and writing mechanics are discussed in light of the feasibility of using this method to evaluate early literacy reforms.

Table 5
Descriptive Statistics for Sycamore Heights Reading and Writing Scores: Grade One

	CMC		TWW		CWS	
	Fall	Spring	Fall	Spring	Fall	Spring
All Students						
N	136	136	136	136	136	136
M	1.92	8.74*	11.87	33.43*	3.76	14.41*
SD	2.52	7.04	7.60	13.75	3.19	9.30
QRTL 1						
N	46	46	27	27	12	12
M	0.00	5.25	3.33	25.25	0.00	10.63
SD	0.00	3.79	1.41	11.03	0.00	8.86
QRTL 2						
N	-	-	27	27	41	41
M	-	-	3.33	25.25	1.49	11.19
SD	-	-	1.41	11.03	0.51	6.46
QRTL 3						
N	38	38	34	34	32	32
M	1.53	10.54	12.06	34.24	3.84	14.43
SD	0.51	7.85	1.84	11.74	0.85	8.28
QRTL 4						
N	31	31	31	31	30	30
M	5.26	12.00	22.32	42.21	8.27	20.59
SD	2.54	6.93	4.48	13.49	2.15	11.92

*p<.01 (Analysis run for "All Students" only)

Table 6
Descriptive Statistics for Sycamore Heights Reading and Writing Scores: Grade Two

	CMC		TWW		CWS	
	Fall	Spring	Fall	Spring	Fall	Spring
All Students						
N	126	126	126	126	126	126
M	9.55	15.53*	29.65	44.42*	23.88	26.43*
SD	7.47	8.68	14.94	17.79	13.99	16.83
QRTL 1						
N	25	25	26	26	28	28
M	1.54	9.25	12.88	30.57	10.57	13.96
SD	1.18	6.36	5.36	11.20	6.14	9.67
QRTL 2						
N	22	22	29	29	29	29
M	5.32	11.15	22.76	40.12	17.07	22.50
SD	1.49	5.75	2.85	14.11	3.81	12.66
QRTL 3						
N	37	37	30	30	24	24
M	9.14	14.06	31.63	47.54	24.71	27.00
SD	2.30	5.47	3.81	16.60	7.12	14.87
QRTL 4						
N	29	29	28	28	32	32
M	20.29	25.48	50.21	57.37	41.09	39.74
SD	5.08	6.90	10.51	14.98	10.67	15.82

*p<.01(Analysis run for "All Students" only)

Table 7
Descriptive Statistics for Sycamore Heights Reading and Writing Scores: Grade Three

	CMC		TWW		CWS	
	Fall	Spring	Fall	Spring	Fall	Spring
All Students						
N	117	117	117	117	117	117
M	16.96	26.50*	40.27	52.91*	26.32	36.48*
SD	7.51	12.12	13.07	16.36	12.30	16.70
QRTL 1						
N	24	24	25	25	25	25
M	7.21	17.25	24.08	41.52	11.68	19.73
SD	2.98	12.37	6.53	12.16	4.16	8.45
QRTL 2						
N	26	26	27	27	27	27
M	14.54	24.13	35.67	48.04	21.26	34.04
SD	1.42	6.60	2.06	12.72	2.52	10.16
QRTL 3						
N	15	15	26	26	27	27
M	17.60	25.50	43.69	56.91	29.78	43.63
SD	0.51	5.92	1.83	12.81	2.06	12.01
QRTL 4						
N	33	33	27	27	26	26
M	25.30	35.38	56.56	66.24	42.08	50.48
SD	4.97	11.79	8.67	16.47	9.43	17.25

*p<.01 (Analysis run for "All Students" only)

Figure 10: Sycamore Heights Mean BASS Reading Scores, Grades One to Three

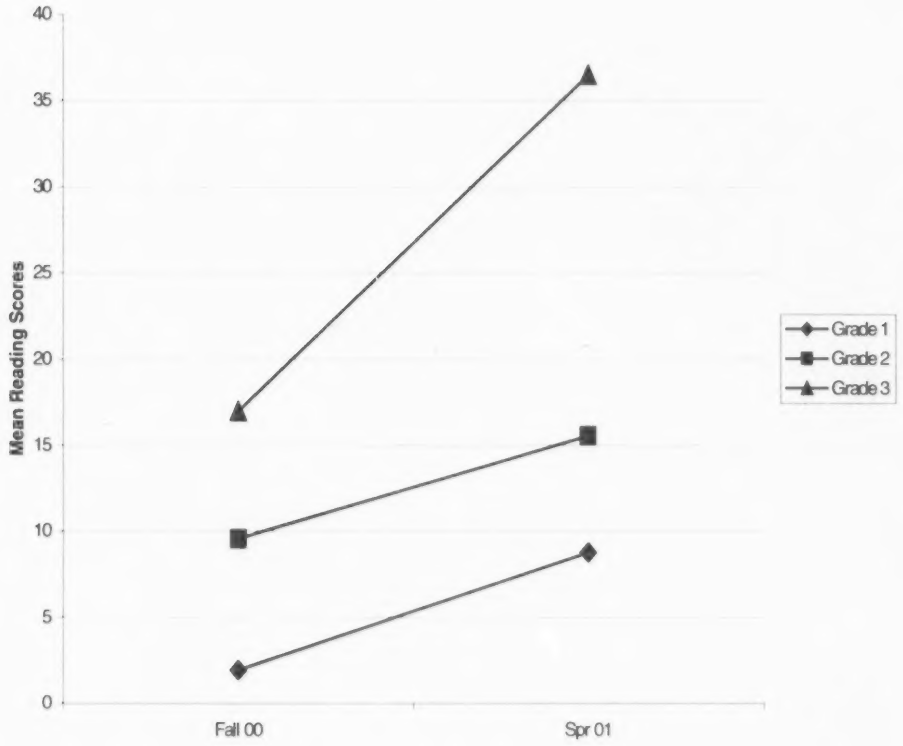


Figure 11: Sycamore Heights Mean BASS Total Words Written, Grades One to Three

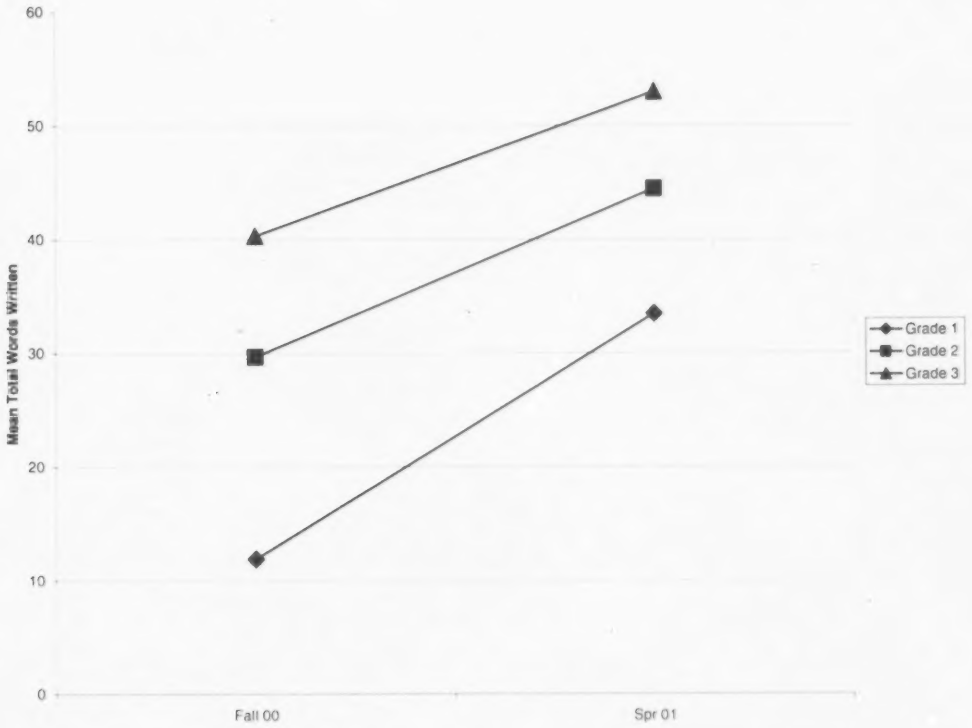


Figure 12: Sycamore Heights Mean BASS Correct Word Sequences, Grades One to Three

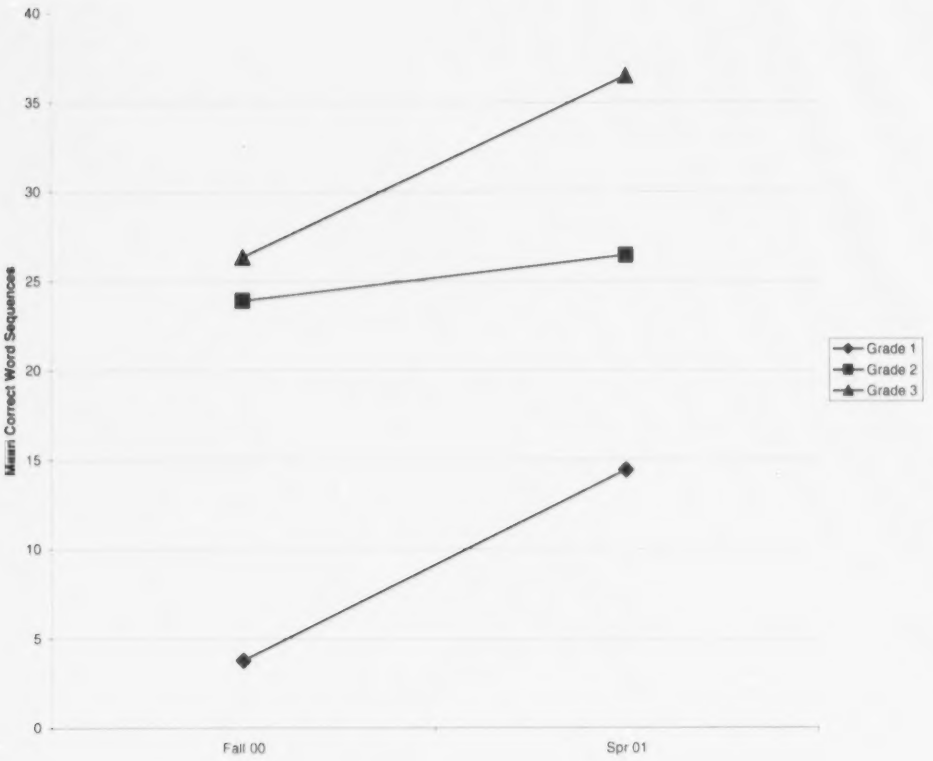


Figure 13: Sycamore Heights Mean BASS Reading Scores, Grade One by Quartile

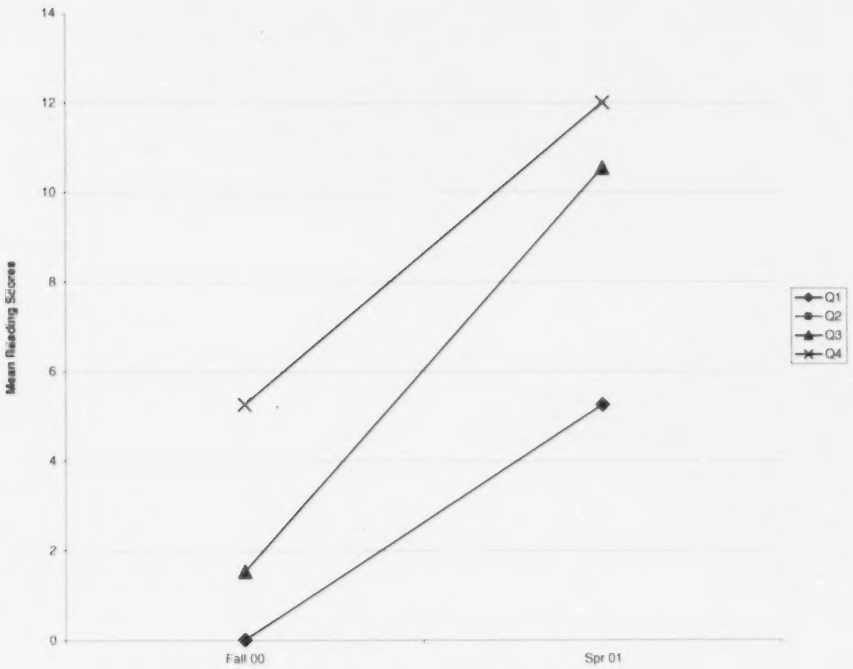


Figure 14: Sycamore Heights Mean BASS Total Words Written, Grade One by Quartile

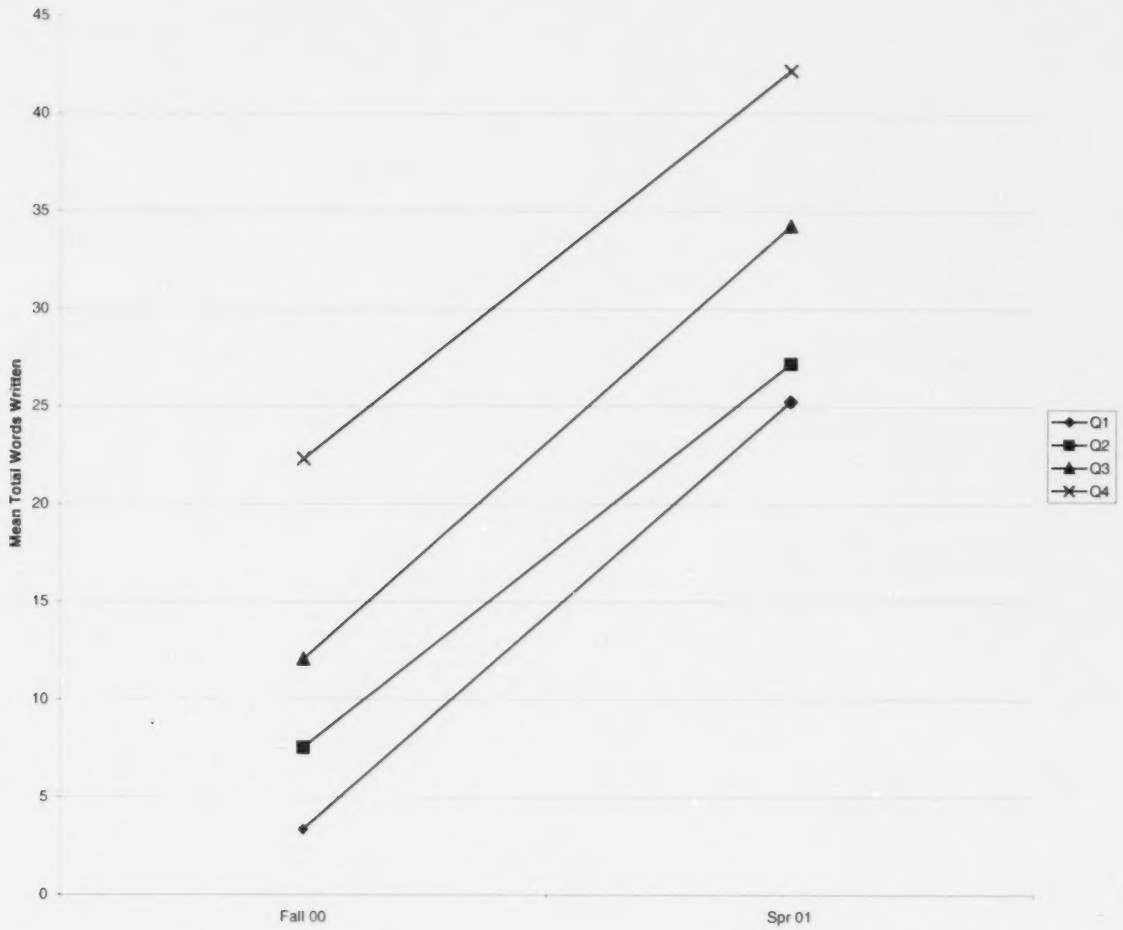


Figure 15: Sycamore Heights Mean BASS Correct Word Sequences, Grade One by Quartile

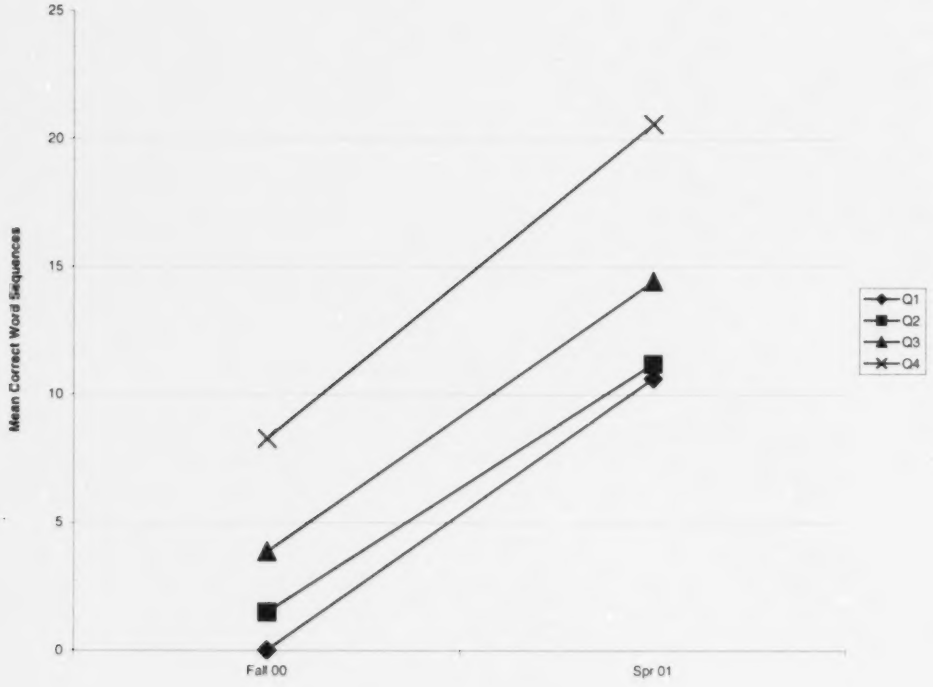


Figure 16: Sycamore Heights Mean BASS Reading Scores, Grade Two by Quartile

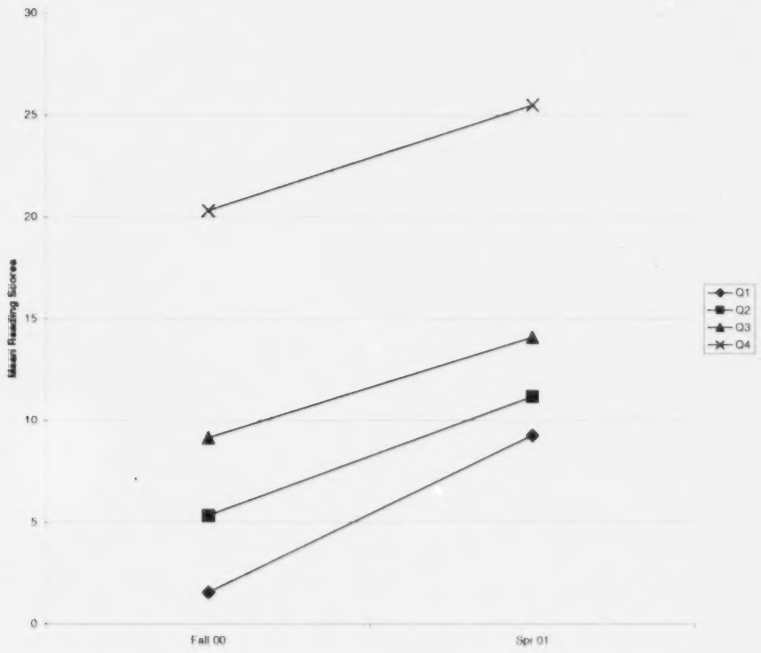


Figure 17: Sycamore Heights Mean BASS Total Words Written, Grade Two by Quartile

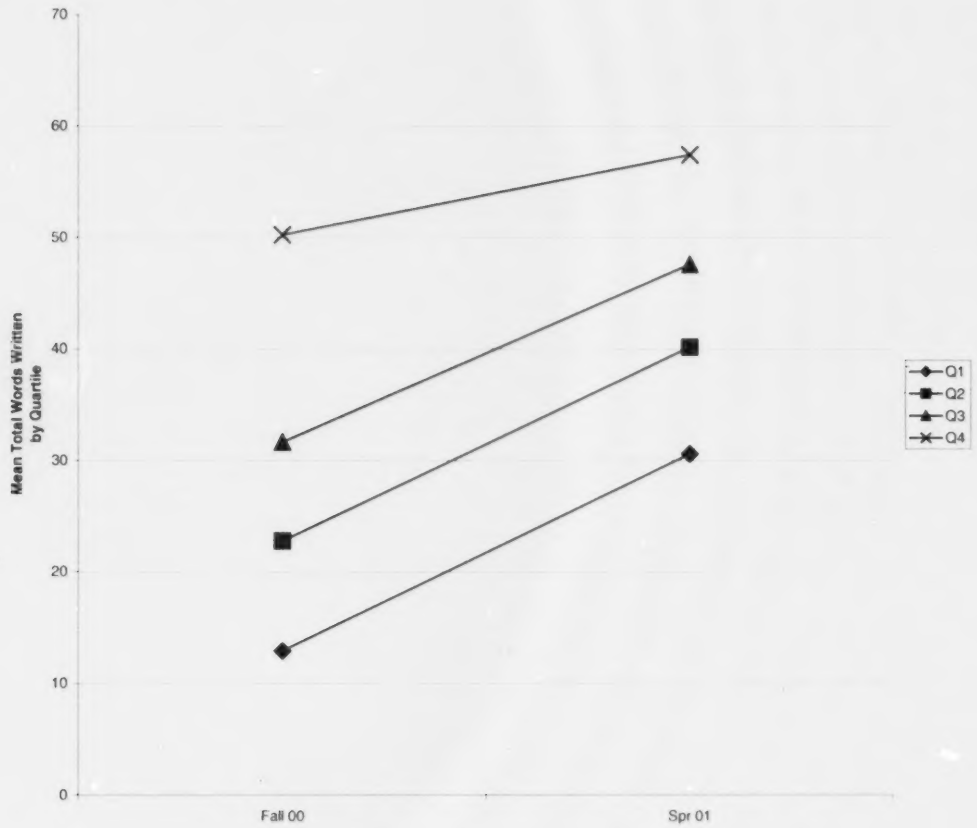


Figure 18: Sycamore Heights Mean BASS Correct Word Sequences, Grade Two by Quartile

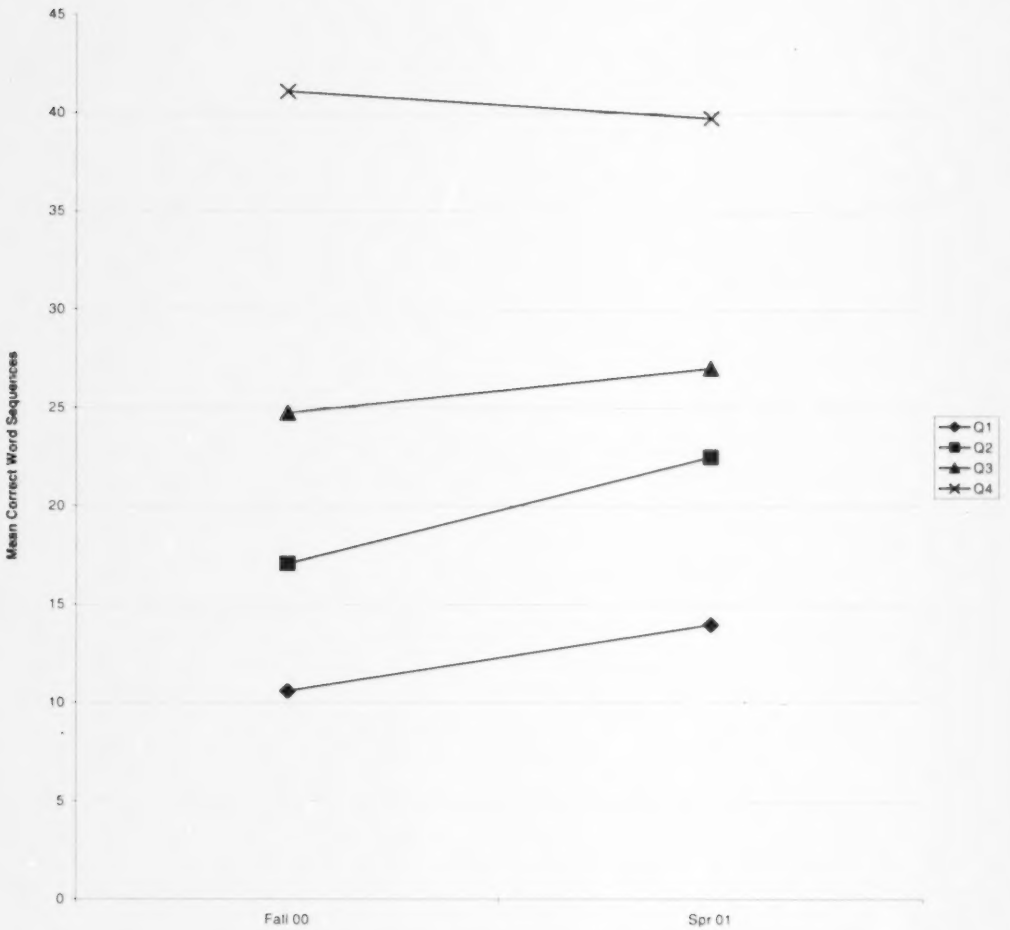


Figure 19: Sycamore Heights Mean BASS Reading Scores, Grade Three by Quartile

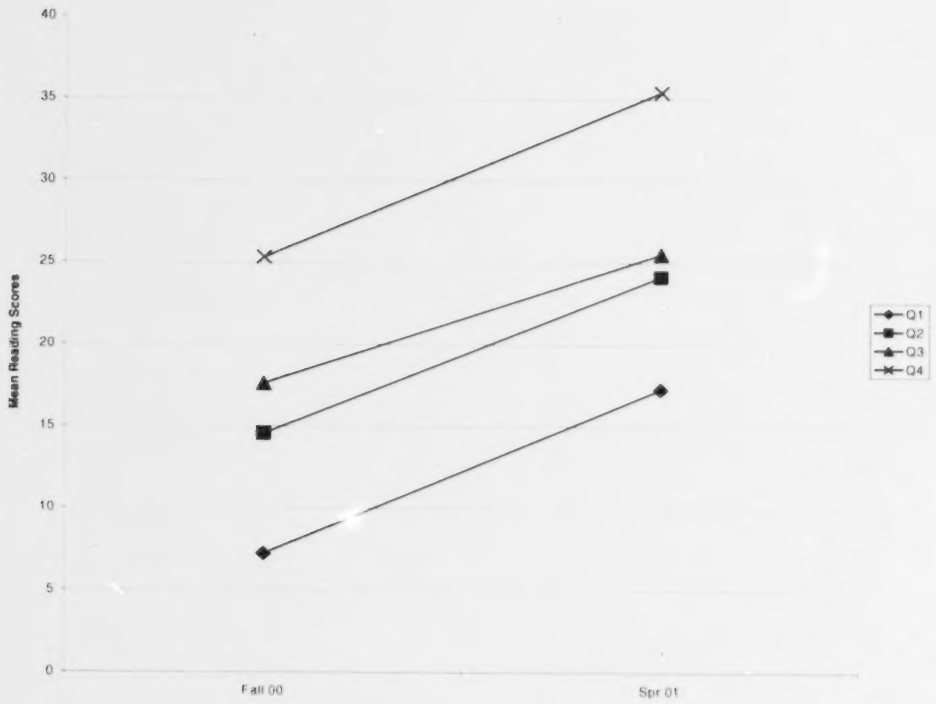


Figure 20: Sycamore Heights Mean BASS Total Words Written, Grade Three by Quartile

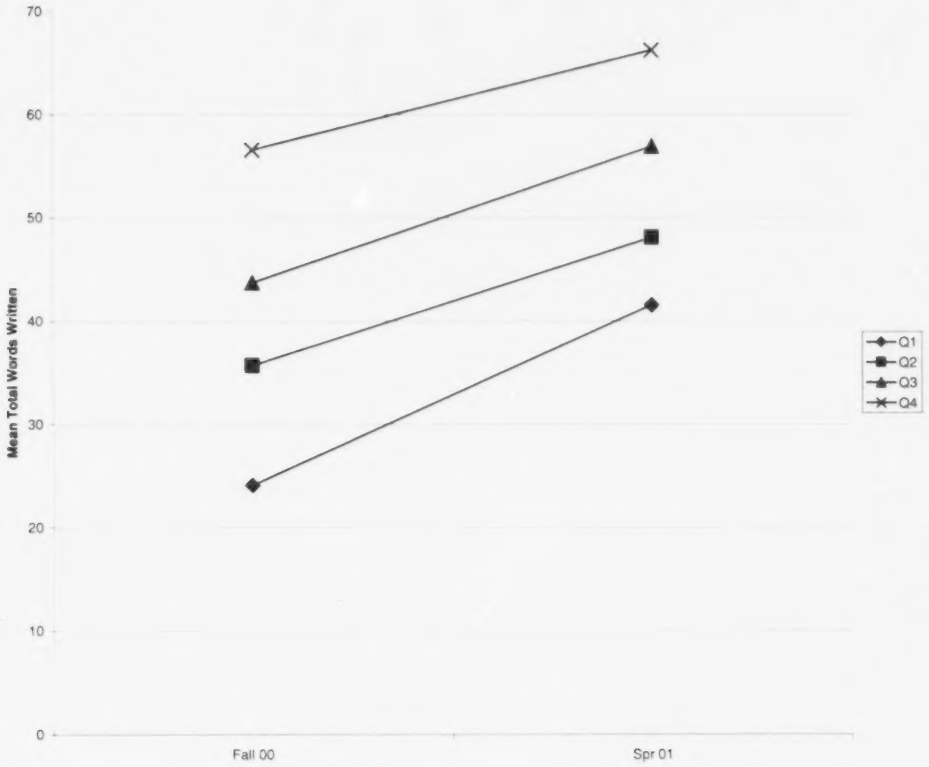
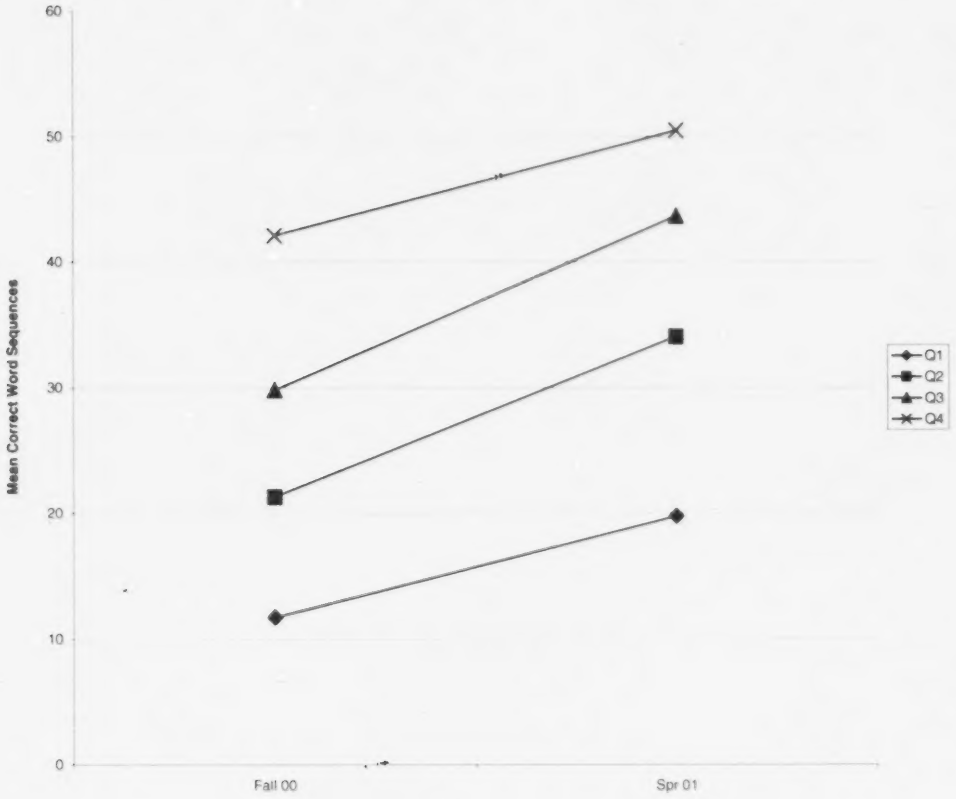


Figure 21: Sycamore Heights Mean BASS Correct Word Sequences, Grade Three by Quartile



Administration of the BASS was fairly simple and involved minimum teacher or student time. Instructions were relatively simple and protocols easy to follow. Teachers and Policy Center staff reported that the lowest-performing students in Grade One were frustrated in that they could not read any words in the passages. In Sycamore Heights more than a third of the Grade One students were also reported to be frustrated with being cut short and not completing the reading or writing passage. Given, however, the necessity of using a similar task for each grade level in order to make the cross-grade comparison, there may not be an alternative to the "power" (i.e., timed) aspect of the test.

Calculating reading and writing fluency scores was fairly simple, and teachers and Policy Center staff were able to reach consistent, reliable scores with only approximately 20 minutes of training. The measures of writing mechanics, CWS, was relatively complicated to calculate and it was difficult to reach an appropriate level of reliability between teachers and research staff. Particularly when there is limited opportunity to train and practice scoring, it would be more advisable to simply calculate correctly spelled words. While this does not allow for a documentation of progress in aspects of writing mechanics other than spelling, at this skill level it will be easier to obtain consistency in scoring.

It is clear that significant gains were made in reading, writing, fluency and mechanics in both schools. In Elm Creek, Grade One students already exceeded the Fall reading scores of Grade Two students. While it is not possible to credit directly changes that occurred due to the ELIGP grant supported literacy program, there is some evidence that changes in the programs as a whole were sufficient to support the reading performance of Grade One students. In writing fluency and mechanics, scores for Grade One students are approaching the Fall scores of Grade Two students. At this rate they have the potential to outperform the older cohort of students in writing as well.

At Sycamore Heights, the reading scores of both Grade One and Two students approached those of the Fall scores of their relatively older cohort of students, suggesting that changes in literacy instruction may be having a positive effect. The greatest gains were made in Grade Three, but because there is no reference it is difficult to rule out that as being a function of grade level. There is evidence of more impact on students' writing fluency, where scores of students in Grades One and Two are already exceeding the Fall

scores of students in Grades Two and Three, respectively. While again, conclusions should be drawn cautiously, it is interesting to note that at Elm Creek, where there was an effort to focus on reading, there are indications of a positive impact on Grade One reading skills. On the other hand, at Sycamore Heights, where the focus this year was on writing instruction, writing fluency has increased.

In both schools, students at all levels of ability made gains. This suggests that instruction has positively affected almost all students, no matter their ability. However, for the lowest-achieving students, if they start out behind their peers the gap between high and low readers will be compounded over the years. An ideal pattern would be gains for all ability levels; but relatively greater or accelerated gains for the lowest-achieving students.

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